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Memo: Department of Water Resources
Water Use Efficiency Branch

From: Roger L. Reynolds

Date: September 22, 2011

Subject: Comments on September 12, 2011 EDF, Pacific Institute, & Sierra Club Letter

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In light of our firm's extensive experience in agriculture, water use and conveyance, and water agency operations, we have reviewed the subject letter regarding Quantifying Agricultural Water Use Efficiency (Section 10608.64 of SBx7-7).

The letter notes that there are "three common and fundamental definitions of Ag water use efficiency:"

a. Hydraulic efficiency
b. Crop production efficiency
c. Economic efficiency.

This approach is fundamentally flawed. The only definition of water use efficiency that is directly related to actual water use is Hydraulic efficiency (related to system losses, irrigation uniformity, crop water need, and a handful of other variables).

Crop production efficiency (CPE - essentially, the crop yield per unit of applied water) is affected by a very large and mostly immeasurable number of variables, including (but not even remotely limited to) water quality, soil quality, irrigation timing, insect pressures, weather, available soil nutrients, cultural practices, crop rotation, and natural yield variability. Although applied water is a factor, it is not the only factor nor is it even a primary controlling factor except at the very extremes.

Economic efficiency (EE - value of produced crop per unit of applied water) is a factor of market conditions, not applied water, and is also affected by a very large number of variables. In this case these variables are more political in nature (such as the strength of the dollar versus other currencies, trade agreements, and production of other nations). The efficient application of water has absolutely nothing to do with the economic value of the produced crop, which can change from the time the crop is planted to when it is harvested. To further complicate this method, in some regions

specific crops are planted not for their economic value but as a rotation crop to help restore soil conditions. Additionally, considering the cost of effective farming in California (which is much higher than most of the rest of the country, or the world for that matter), this is an issue that solves itself – poor economic efficiency will put a farmer out of business fairly quickly. From a grower's perspective, the logical conclusion or fear of this type of analysis is that one day, California policy makers might desire to tell growers what they can and cannot grow based on some type of estimated "economic efficiency" which would be totally unacceptable to growers.

Although it is technically possible for a grower to calculate both a CPE and an EE, the result in both cases would be difficult to understand and there would be the potential to mislead the public, the legislature, and regulatory agencies into believing a quantifiable relationship is possible and it can be used to determine the efficiency of water use.

Additionally, this approach is a blatant violation of privacy. An individual growers' crop yields and financial information (revenue) is private information and neither the water agency, DWR (or any other state agency), nor the public are entitled to it. The disclosure and inevitable misuse of this information could jeopardize growers' ability to acquire loans and their ability to do business.

Finally, this type of approach for a proposed methodology ignores the administrative burden that would be required. For large water suppliers, collection of water use and cropping data is already a time consuming task, and for small water suppliers it will likely require staff resources that do not exist. The addition of crop production and economic data will more than double the amount of work required to implement this type of water use efficiency methodology. Currently water agencies and growers are obligated to comply with a daunting number of burdensome regulations including the Irrigated Lands Regulatory Program, Reclamation Law, groundwater management programs, immigration and employment issues, and air quality and emission regulations. Although no one is going to argue that land, air, and water resources should not be protected, the ongoing addition of new potential regulations and regulatory programs is part of what has made California one of the worst business friendly states in the nation. The proposed methodology for quantifying agricultural water use efficiency needs to be developed in a manner that provides useful and understandable information that is reasonable to acquire.

In closing, the proposed Crop production efficiency and Economic efficiency outlined in the subject letter would be an unnecessary and complicated approach that will produce misleading and meaningless results while dramatically increasing the administrative burden on water suppliers and individual growers.